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then treats of the chemico-geological relations between the latest geological formations, soils, and the more ancient deposits which, after emergence, have been subject to subaërial agencies.

The American Devonian placoderms. By E. W. CLAYPOLE, Pasadena, Calif.

Following a detailed discussion of the structure and relationships of the principal Devonian genera of North American placoderms, the author presented his views on the habits, habitat, origin and migrations of the great armor-clad forms.

The Berkeley Hills—a detail of Coast Range geology. By ANDREW C. LAWSON, Berkeley, Calif.

A discussion of the geological history and structure of the hills in the vicinity of Berkeley, accompanied by a colored map on a scale of 1:12,000 and six geological sections.

ANDREW C. LAWSON,
Secretary.

PROFESSOR HENRY ALLEN HAZEN.*

By a sad accident on the evening of Monday, January 22d, the Weather Bureau lost one of its most prominent officials. Professor Henry Allen Hazen, while riding rapidly on his bicycle, hastening to his night work at the Weather Bureau, collided with a pedestrian and was dashed to the ground. After lying unconscious for twenty-four hours, he expired on the 23d. His body is interred in the family burying-ground at Deerfield, Massachusetts.

Professor Hazen was born, January 12, 1849, in Sirur, India (about 100 miles east of Bombay), the son of Reverend Allen Hazen, a missionary of the Congregational Church. He came to this country when ten years old and was educated at St. Johnsbury, Vermont, and at Dartmouth College, where he was graduated in 1871. After this, he removed to New Haven and

was for four years instructor in drawing in the Sheffield Scientific School, and for four years subsequent was assistant in meteorology and physics under Professor Elias Loomis. He was also privately associated with the latter in meteorological researches and the preparation of many of the 'Contributions to Meteorology,' published by Professor Loomis, some of which bear evidence of the reflex influence of the student on the master.

In the spring of 1881, when the present writer first saw Professor Hazen in New Haven, the latter showed such an earnest interest in meteorology as to justify recommending him to the position of computer in the 'Study Room' which was then being organized by General William B. Hazen the Chief Signal Officer, for the purpose of developing the scientific work of the Bureau, as a necessary adjunct to its important practical work. After his entry (May, 1881) into the meteorological work of the Signal Service, Professor Hazen took a prominent part in this field. The special works assigned to him (such as the deduction of altitude by railroad levels, the study of the psychrometer, the proper exposure of thermometers, the study of thunderstorms, annual courses of lectures on meteorology), were by no means sufficient to absorb his energies, and we find him branching off into many other subjects, such as barometric hypsometry and the reduction to sea-level, the testing of anemometers, the study of tornadoes and the theories of cyclones, atmospheric electricity, balloon ascensions, the influences of sunspots and the moon, the danger lines of river floods, the sky glows and the eruption of Krakatoa. His enthusiastic advocacy of the importance of the balloon to meteorology was very highly appreciated. His five ascensions (1886, June 24, 25; 1887, June 17 and August 13; 1892, October 27), undoubtedly gave very accurate temperatures and humidities.

* From advance sheets of the *Monthly Weather Review*.

After the death of General Hazen and during the administration of General Greely, the computers of the Study Room became junior professors at a higher salary and were assigned to official duties of a broader aspect. In the course of such duties, Professor Hazen frequently took his turn as forecast official (beginning with October, 1887), and as editor of the *Monthly Weather Review* (beginning with December, 1888), while also acting as assistant in the Records Division. In July, 1891, in accordance with the terms of the transfer to the Department of Agriculture, he was appointed one of the professors of meteorology in the Weather Bureau, where he was at once assigned to regular and congenial duties in the Forecast Division.

Having shown that 'the Hazen thermometer shelter' was much better than the large close double louver formerly used, his form was adopted by the Bureau in 1885 and still remains in use. His experimental work with the sling psychrometer and dew-point apparatus was executed with great care and refinement, but the resulting psychrometer formula differs from those in current use in that it rejects the important term depending on the barometric pressure. Among his larger publications were: *The Reduction of Air Pressure to Sea-level* and *The Climate of Chicago*.

In addition to his official work in the Weather Bureau, Professor Hazen was a frequent contributor to meteorological and other scientific journals. He was one of the supporters of SCIENCE during the years 1882-89 and of *The American Meteorological Journal*, 1884-96. He also, published independently his 'Meteorological Tables,' and 'The Tornado,' and possibly other works. A complete list of his published writings would include several hundred titles.

It must be confessed that a peculiar temperament sometime led him to beliefs and

statements in scientific matters unacceptable to his colleagues, but to which he adhered and on which he acted with such pertinacity that to some he occasionally appeared obstinate and headstrong; this was simply a result of the intense earnestness of his own convictions, which so completely absorbed his mind that there was no place for further considerations. However, the amiability of his character always prevented any enduring unpleasant feeling between himself and his associates.

C. A.

SCIENTIFIC BOOKS.

Annual Report of the Bureau of Steam Engineering of the Navy Department; 1899. Washington, Government Printing Office. 1899. Pp. 89. Many illustrations and working drawings.

The annual report of the Chief of the Bureau of Steam Engineering of the Navy Department, made up in advance of the compilation of the annual message of the President and reports of the heads of department for the information of Congress and the people of the United States, always contains interesting matter bearing upon applied science, although mainly devoted to the purely technical side of the work of that bureau. Admiral Melville is equally positive, direct and effective, whether at the Lena Delta seeking lost heroes, or in his office at Washington, and his report illustrates his character as well as his work. Passing over the purely technical accounts of the condition of the mechanisms of the naval war-engine, and of the fleets, the first subject of general interest is that of the recent consolidation of the two great corps, the engineer and the line officers, as effected by the 'personnel bill' of last year. Without explicit assertion of the fact, it may fairly be inferred, we think, that the Chief of Bureau is apprehensive lest the terms of the bill and its purpose may fail of complete accomplishment, the Department lacking that firmness and determination to obey and to make successful the conclusions of Congress regarding this important experiment. It is obviously an experiment and is no less obvious that it